Before the
Federal Communications Commission
Washington, DC

In the Matters of	)	
	)	
Amendment of Parts 2 and 97 of the	)	ET Docket No. 02-98
Commission's Rules to Create a Low Frequency	)	RM-9404
Allocation for the Amateur Radio Service	)	
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Amendment of Parts 2 and 97 of the	)	
Commission's Rules Regarding an Allocation of	)	RM-10209
a Band Near 5 MHz for Amateur Radio Service	)	
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Amendment of Parts 2 and 97 of the	)	
Commission's Rules Concerning the Use of the	)	RM-9949
2400-2401 MHz Band by the Amateur and	)	
Amateur Satellite Services	)	

COMMENTS OF EXELON CORPORATION

Exelon Corporation ("Exelon") submits these comments on that portion of the Notice of Proposed Rule Making in this docket[1] dealing with the Commission's proposal to add a new secondary allocation in the 135.7-137.8 kHz band for the amateur service in response to a request by the Amateur Radio Relay League ("ARRL"). Because of the potential effect on energy delivery operations, Exelon recommends that the Commission not grant the amateur service secondary license privileges in this band. However, if it does, it should at least condition those license privileges in a way that provides that utilities have a right to operate Power Line Carrier ("PLC") systems in that band without

[1] *In the Matters of Amendment of Parts 2 and 97 of the Commission's Rules to Create a Low Frequency Allocation for Amateur Radio Service, et al.,* ET Docket No. 02-98, Notice of Proposed Rule Making, FCC 02-136, rel. May 15, 2002 ("NPRM").

interference from the amateurs and without regard to whether utility PLC equipment is interfering with the amateurs' use of the band.

Exelon companies provide Critical Infrastructure ("CI") energy delivery services. Commonwealth Edison ("ComEd") serves more than 3.4 million electricity customers in northern Illinois (including Chicago) and PECO Energy serves about 1.5 million electricity and 430,000 natural gas customers in southeastern Pennsylvania (including Philadelphia). Both of these companies use PLC systems to provide communications between the automated high-speed protective devices at either end of high voltage electrical transmission lines. The PLC system is critical to quickly and automatically de-engerizing high voltage transmission lines during faults such as lightning strikes, storms, downed wires, or vehicular accidents, thereby minimizing equipment damage and maximizing safety to persons and property.

The Commission's proposal to grant a new secondary allocation to the amateur service for experimentation in the 135.7-137.8 kHz band would potentially affect the electrical transmission system protection operations of both companies. ComEd operates 4 transmitters between 135.7 and 137.8 kHz and 47 receivers between 131.7 and 141.8 kHz.[2] PECO operates 7 transmitters and 20 receivers in the affected frequency range.

The potential negative effect of the Commission's license proposal on CI electric utilities is two-fold: First, more robust usage of the frequencies in question by amateur operators could cause interference with utilities' PLC protection systems. Second,

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[2] As the IEEE Power System Relaying Committee note, PLC receivers typically require a 4 kHz separation from other signals. Therefore, in looking for the potential recipients of interference, one must look for receivers operating on frequencies up to 4 kHz on either side of the interfering frequency.

utilities could potentially be forced to immediately shut down and then retune or replace these systems if they interfere with licensed amateur operators.

In response to the first concern, the Commission states its belief that interference will be rare because of amateur operators' use of the "listen-before-transmit" protocol.[3] However, Exelon agrees with the previous comments of the IEEE Relay Communications Subcommittee that neither the ON/OFF type nor the frequency shift keying ("FSK") type of PLC system will normally give a clue to the "listener" that transmission on the PLC system's "receive" frequency will cause interference. In the case of the ON/OFF system, this is because the system is normally off and no signal is transmitted. In the case of the FSK system, this is because the "normal" frequency is shifted by a fault, and it is the shifted frequency that causes the relay to trip – i.e., if the conscientious amateur operator listens, she may hear the normal frequency, but she will not know that there is shifted frequency is to avoid, much less what that frequency is.[4]

In addition, the Commission believes that restricting effective isotropic radiated power ("EIRP") to 1 W, as opposed to the 2 W requested by ARRL, will also reduce the chances of interference. Because the Commission acknowledges that EIRP is difficult to measure, it is also limiting transmitter maximum output to 100 W, instead of the 200 W requested by ARRL.[5] While these steps may be helpful in reducing the risk of interference, they are by no means any insurance that interference will not occur. Because EIRP is difficult to ascertain and because there are no limits on antenna configuration in the proposal – in fact the Commission fully intends that amateur

[3] NPRM at ¶23.
[4] See NPRM at ¶17.
[5] NPRM at ¶25.

licensees be able to experiment more freely with antenna design and antenna construction[6] – the risk that the EIRP limitation will be exceeded on a regular basis is significant.

As problematic as is the risk that interference from amateur operators will cause an unnecessary trip of a relay on a high voltage transmission line, equally problematic is the possibility that a utility would have to immediately shut down the PLC transmitter. Because the PLC/protective relay scheme provides the high-speed, automatic protective system for the transmission line, it is possible that the line could not be adequately be protected by the remaining "back-up" relay protection, and the transmission line would need to be taken out of service until the PLC system could be re-tuned or replaced. And, depending on circumstances, this could take a significant amount of time.

While it is certainly possible that benefits could flow to society from amateur operators' exploitation of the proposed license privileges, that possibility cannot justify the risk to critical infrastructure service and the costs that would be passed through to electric rate payers if an amateur operator could force a utility to shut off its PLC equipment if that equipment interfered with the amateur's operations. In this case, from a societal perspective, the costs would clearly outweigh the speculative societal benefits.

Moreover, an allocation of spectrum in a manner that could put the continued operation of utility radio systems at risk is inconsistent with the intent of Section 1016 of the USA Patriot Act.[7] This section created a national policy directive aimed at preventing or minimizing any physical or virtual disruptions to the critical infrastructures

[6] NPRM at ¶22.

of the United States, including its energy delivery infrastructure, and that "actions necessary to achieve this policy … be carried out in a public-private partnership involving corporate and non-governmental organizations."[8] Exelon submits that, because of the existing use of the 135.7-137.8 kHz band by utilities, a grant of ARRL's request would be inconsistent with the intent of Section 1016 of the USA Patriot Act. The allocation is simply not in the best interests of society under the existing circumstances and should, therefore, be rejected.

To remedy this potential misallocation of societal resources, Exelon proposes that, if the Commission nonetheless decides to adopt the proposed allocation, the Commission should specify that the interference rights of the amateur licensees be subordinate to those of utility PLC system operators. In other words, the utility should be allowed to continue to operate or deploy PLC systems in the affected frequency band, and amateur licensees should have full responsibility for taking any steps necessary to mitigate the effects of interference on their own operations from the utilities' PLC systems.

In light of all these factors, the Commission should reconsider its preliminary decision to provide an allocation for expanded amateur operations in frequencies used by utility PLC systems. In the alternative, the Commission should specify that the interference rights of amateur licensees are subordinate to those of utilities operating PLC systems on the same frequencies.

Finally, as a matter separate from the proposed allocation, Exelon supports UTC's comments on the issue of whether the UTC's database of utility PLC locations should be

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[7] Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA Patriot Act) Act of 2001, Pub. L. No. 107-56, 115 Stat. 272, §1016 (2001).

made available to amateur operators. First, it would not be a good idea to make such critical infrastructure information freely available to the public because the information could easily be used by the wrong people for the wrong purposes. Second, the information contained in the database is not likely to be of much use to amateur operators, because, although it contains the end-points of PLC-protected transmission lines, it does not show the routes that the lines take.

Respectfully submitted,

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Dated: July 26, 2002

[8] *Id.*, at §1016(c)(1) and (2).